

NOV 07 2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. - 25. Canceled.

26. (Previously presented) The process according to claim 32 wherein the Al<sub>2</sub>O<sub>3</sub> membrane is formed from an Al<sub>2</sub>O<sub>3</sub> slurry.

27. - 31. Canceled.

32. (Currently amended) A process for manufacturing a capacitive vacuum measuring cell, comprising the following steps:

- a. manufacturing a first Al<sub>2</sub>O<sub>3</sub> housing plate (1) with outer and inner opposing surfaces and an outer periphery;
- b. forming an electrically conductive surface (7) on the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate to provide a first electrode of the capacitive vacuum measuring cell;
- c. manufacturing a second Al<sub>2</sub>O<sub>3</sub> housing plate (4) with an outer periphery;
- d. forming an opening in the second Al<sub>2</sub>O<sub>3</sub> housing plate (4) extending therethrough;
- e. sealing a connecting port (5) about the opening formed in the second Al<sub>2</sub>O<sub>3</sub> housing plate (4);
- f. manufacturing of an Al<sub>2</sub>O<sub>3</sub> membrane (2) having first and second opposing surfaces and an outer periphery, the membrane having a thickness within the range of 10

μm to 250 μm;

- g. forming an electrically conductive film (7) on the first surface of the Al<sub>2</sub>O<sub>3</sub> membrane (2) to provide a second electrode of the capacitive vacuum measuring cell;
- h. disposing the Al<sub>2</sub>O<sub>3</sub> membrane (2) between the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate (1) and the second Al<sub>2</sub>O<sub>3</sub> housing plate (4), with the first surface of the Al<sub>2</sub>O<sub>3</sub> membrane (2) facing the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate (1), and spacing the first surface of the Al<sub>2</sub>O<sub>3</sub> membrane (2) at a predetermined distance from the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate (1) to define a reference vacuum chamber (25) therebetween, and spacing the second Al<sub>2</sub>O<sub>3</sub> housing plate (4) at a predetermined distance from the second surface of the Al<sub>2</sub>O<sub>3</sub> membrane (2) to define a measurement vacuum chamber (26) therebetween; and
  - i. sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane (2) to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate (1) and the second Al<sub>2</sub>O<sub>3</sub> housing plate (4) to form a vacuum tight seal therebetween.

33. (Previously presented) The process recited by claim 32 wherein the step of manufacturing the Al<sub>2</sub>O<sub>3</sub> membrane (2) includes the steps of:

- a. forming the Al<sub>2</sub>O<sub>3</sub> membrane (2) from an Al<sub>2</sub>O<sub>3</sub> slurry;
- b. heating the membrane in a furnace a first time to sinter the membrane, with subsequent cool-down;
- c. heating the membrane a second time for smoothing the membrane, with subsequent cool down.

34. (Previously presented) The process recited by claim 33 wherein the step of forming the Al<sub>2</sub>O<sub>3</sub> slurry includes the steps of forming a ribbon-shaped Al<sub>2</sub>O<sub>3</sub> green body upon a carrier foil, and subsequently pulling the ribbon-shaped Al<sub>2</sub>O<sub>3</sub> green body from the carrier foil.

35. (Previously presented) The process recited by claim 32 including the further steps of forming a first electrical, vacuum-tight feedthrough (6) through first Al<sub>2</sub>O<sub>3</sub> housing plate (1), and coupling said first electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate to effect electrical coupling thereto.

36. (Previously presented) The process recited by claim 34 including the further steps of forming a second electrical, vacuum-tight feedthrough (6) through first Al<sub>2</sub>O<sub>3</sub> housing plate (1), and coupling said second electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the first surface of the Al<sub>2</sub>O<sub>3</sub> membrane (2) to effect electrical coupling thereto.

37. (Previously presented) The process recited by claim 32 including the further steps of forming a getter opening (13/14) within the first Al<sub>2</sub>O<sub>3</sub> housing plate (1) communicating with reference vacuum chamber (25), disposing a getter (10) within said getter opening (13/14), pumping down reference vacuum chamber (25) to evacuate matter therefrom, and activating the getter (10) to further lower the pressure within reference vacuum chamber (25).

38. (Previously presented) The process recited by claim 37 including the further steps of

extending the getter opening (13/14) through first Al<sub>2</sub>O<sub>3</sub> housing plate (1), applying a vacuum to getter opening (13/14) to pump down the reference vacuum chamber (25), and subsequently applying heat to a cover (8) overlying getter opening (13/14) to form a vacuum-tight seal between the cover (8) and the first Al<sub>2</sub>O<sub>3</sub> housing plate (1) and simultaneously activating the getter (10).

39. (New) The process recited by claim 32 wherein said step of sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate includes the steps of:

applying a glass paste to the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane;

disposing the Al<sub>2</sub>O<sub>3</sub> membrane between the outer peripheries of first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate;

heating the Al<sub>2</sub>O<sub>3</sub> membrane and the first and second Al<sub>2</sub>O<sub>3</sub> housing plates to a temperature above 330 degrees Centigrade to sealingly join the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate.

40. (New) The process recited by claim 32 wherein said step of sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate includes the steps of:

disposing the Al<sub>2</sub>O<sub>3</sub> membrane between the outer peripheries of first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate;

applying a solder to the joint between the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane and the

outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate; and heating the Al<sub>2</sub>O<sub>3</sub> membrane and the first and second Al<sub>2</sub>O<sub>3</sub> housing plates to a temperature above 300 degrees Centigrade to sealingly join the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate.

41. (New) The process recited by claim 32 wherein said step of sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate includes the steps of:

disposing the Al<sub>2</sub>O<sub>3</sub> membrane between the outer peripheries of first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate;

welding the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate at a welding temperature above 300 degrees Centigrade.

42. (New) The process recited by claim 32 wherein said step of sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate includes the steps of:

disposing the Al<sub>2</sub>O<sub>3</sub> membrane between the outer peripheries of first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate;

brazeing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate with a corrosion resistant brazeing material at a temperature above 300 degrees Centigrade.

43. (New) The process recited by claim 32 wherein said step of sealing the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate includes the steps of:

disposing the Al<sub>2</sub>O<sub>3</sub> membrane between the outer peripheries of first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate;

diffusion bonding the outer periphery of the Al<sub>2</sub>O<sub>3</sub> membrane to the outer peripheries of the first Al<sub>2</sub>O<sub>3</sub> housing plate and the second Al<sub>2</sub>O<sub>3</sub> housing plate at a temperature above 300 degrees Centigrade.

44. (New) The process recited by claim 32 wherein the membrane has a thickness within the range of 10 μm to 120 μm.

45. (New) The process recited by claim 32 wherein the membrane has a diameter within the range of 5 mm to 80 mm.

46. (New) The process recited by claim 32 wherein the membrane has a diameter within the range of 5 mm to 40 mm.

47. (New) The process recited by claim 32 wherein the membrane material has a grain size less than 20 μm.

48. (New) The process recited by claim 32 wherein the membrane material has a grain size less than 10 μm.

49. (New) The process recited by claim 33 wherein the step of heating the Al<sub>2</sub>O<sub>3</sub> membrane a second time for smoothing the membrane includes the step of pressing the membrane between two flat plates.